

Preliminary Amendment
Attorney Docket No. 042440

REMARKS

The above amendment to the claims has been made to incorporate the changes made under PCT Article 34, and to place the application in better condition for examination. An English translation of the PCT Article 34 Amendment is enclosed.

In the event that any fees are due in connection with this paper, please charge our Deposit Account No. 50-2866.

Respectfully submitted,

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Enclosures: English translation of the PCT Article 34 Amendment.

Amendment

4. Subject of Amendment

Claims

5. Content of Amendment

(1) "codoping two kinds of impurities consisting of oxygen (O) and carbon (C), into silicon" on line 5, claim 1, page 10 of Claims, is amended to "codoping two kinds of impurities consisting of oxygen (O) and carbon (C), into silicon at a concentration equal to or greater than that of said transition metal impurity".

(2) "thermally annealing said impurity-doped silicon" on line 5, claim 1, page 10 of Claims, is amended to "thermally annealing said impurity-doped silicon at 250°C or more".

6. List of Exhibit

(1) Page 10, Claims

What is claimed is:

1. (After Amendment) A method for gettering a transition metal impurity diffused in a silicon crystal at ultra high-speeds to form deep impurity levels therein, said method comprising the steps of:

codoping two kinds of impurities consisting of oxygen (O) and carbon (C), into silicon at a concentration equal to or greater than that of said transition metal impurity; and

thermally annealing said impurity-doped silicon at 250°C or more to precipitate an impurity complex comprising an atom of said transition metal impurity, said C and said O, in said silicon crystal, whereby said transition metal impurity is confined in said silicon crystal to prevent the ultra high-speed diffusion of said transition metal impurity and electrically deactivate deep impurity levels to be induced by said transition metal impurity.

2. The method as defined in claim 1, wherein said transition metal impurity is at least one selected from the group consisting of Co, Ni and Cu which are released from a raw material during a process of forming a silicon single crystal and mixed in said silicon crystal, and Cu which is mixed in a silicon wafer during a process of printing a Cu wiring.

3. The method as defined in claim 1, wherein said codoping step includes codoping oxygen (O) in a natural manner and carbon (C) in an artificial manner, or both oxygen (O) and carbon (C) in an artificial manner, into a silicon melt during a silicon single crystal growth through a Czochralski crystal pulling process.

4. The method as defined in claim 1, wherein said codoping step includes ion-injecting an oxygen ion and a carbon ion into a silicon wafer to codope both oxygen (O) and carbon (C) in an artificial manner, into said silicon wafer.